THE MORPHOLOGICAL AND TAXONOMIC SIGNIFICANCE OF THE BASAL ABDOMINAL SEGMENTS IN HEMIPTERA-HETEROPTERA

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In a recent study of the generic classification of the Aradidae, important characters were discovered in the basal abdominal tergites. Such characters have been overlooked in the past because the parts are concealed beneath the wings in most museum specimens. Recent morphological studies dealing with the first and second abdominal segments of Hemiptera have been concerned almost exclusively with the ventral side of the segments in question.[1] [2]

On the basis of the ventral segments, it has been customary to count the visible first segment as the second segment, the true first segment presumably being completely lost. However, in the present study, which included several families of Hemiptera, it was found that the first and second dorsal abdominal segments vary in degree of reduction and fusion, and in some the true first and second segments are clearly separated.

The degree of fusion, the position, and the form of the sutures have proved to be of taxonomic importance in the Aradidae. In the sub-family Mezirinae, in which the first and second segments are clearly separated, each genus has a particular structure. The characters seen are very different from those of the succeeding segments and are very constant within a genus. This fact has helped greatly in determining genera. Details of this will be discussed in the forthcoming generic classification of the Aradidae by Usinger and Matsuda.

Miridae were also examined systematically with the help of Dr. Josè Carvalho, and it was found that the particular structure of the first and second abdominal tergites is more or less constant within each tribe or subfamily. This was especially pronounced in the tribe Bryocorini of the Bryocorinae. On the basis of preliminary evidence it is difficult to say whether or not each particular structure occurs at the generic level in the Miridae, but the indication thus far is that each particular structure is a higher

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[1] Brindley, 1938, The metathoracic postcoxal bridge of Heteroptera. Proc. Royal Ent. Soc. London, (A) 13 :103-106.

[2] Larsen, 1945, Der thorax der Heteropteren skelett und muskulatur. Lunds Univeritets Arsskrift. N.F. Avd. 2. 41(3) :1-110.

group character in the Miridae. Apparently the Miridae do not offer good material for study of the dorsal abdominal characters because of their fragile bodies and the resulting irregular secondary sutures that appear on the surface of the segments with which we are concerned. In some families, for instance in Reduviidae, the first and second segments are incompletely fused, and the resulting structure in these segments assumes a bizarre shape. A comparison of one species of *Triatoma* and *Paratriatoma hirsuta* Barber shows a very distinct difference in structure in the incompletely fused first and second segments. Reduviidae apparently offer good material to test the applicability of this discovery.

Based on an extensive study of the Aradidae, less extensive observation on the Miridae and a cursory, rather unsystematic survey of other families, it is suggested that each particular pattern of fusion or modification in the first and second abdominal tergites and the resulting structure occurs: 1) at the subgenric or generic level, or 2) in more than one genus within a tribe or a subfamily, or 3) in more or less constant form within a tribe or subfamily.

It should be noted that the first segment sometimes is not directly concerned in producing a particular structure as is evidenced in many genera of the Mezirinae. Also there are cases where the second segment is not directly involved in producing the particular structure as is evidenced in many genera of Reduviidae. Occasionally the third segment contributes towards the formation of a particular structure.

Presumably there will be cases in which the characters in question do not fit any of the three levels stated above. Nevertheless, it would appear to be worthwhile to investigate this particular part of the body from the view point of systematics. If we once have a constant generic, tribe, or subfamily character, this helps greatly in straightening out doubtful species or genera. It should also be mentioned that other parts of the body beneath the hemelytra offer a possibility for characters of higher taxonomic units.

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